Web 2.0 Semantic Systems: Collaborative Learning in Science

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The basic goal of education within a discipline is to transform a novice into an expert. This entails moving the novice toward the "semantic space" that the expert inhabits—the space of concepts, meanings, vocabularies, and other intellectual constructs that comprise the discipline.

Metadata is significant to this goal in digitally mediated education environments. Encoding the experts' semantic space not only enables the sharing of semantics among discipline scientists, but also creates an environment that bridges the semantic gap between the common vocabulary of the novice and the granular descriptive language of the seasoned scientist (Greenberg, et al, 2005). Developments underlying the Semantic Web, where vocabularies are formalized in the Web Ontology Language (OWL), and Web 2.0 approaches of user-generated folksonomies provide an infrastructure for linking vocabulary systems and promoting group learning via metadata literacy.

Group learning is a pedagogical approach to teaching that harnesses the phenomenon of "collective intelligence" to increase learning by means of collaboration. Learning a new semantic system can be daunting for a novice, and yet it is integral to advance one's knowledge in a discipline and retain interest. These ideas are key to the "BOT 2.0: Botany through Web 2.0, the Memex and Social Learning" project (Bot 2.0).[72]

Bot 2.0 is a collaboration involving the North Carolina Botanical Garden, the UNC SILS Metadata Research center, and the Renaissance Computing Institute (RENCI). Bot 2.0 presents a curriculum utilizing a *memex* as a way for students to link and share digital information, working asynchronously in an environment beyond the traditional classroom. Our conception of a memex is not a centralized black box but rather a flexible, distributed framework that uses the most salient and easiest-to-use collaborative platforms (e.g., Facebook, Flickr, wiki and blog technology) for personal information management. By meeting students "where they live" digitally, we hope to attract students to the study of botanical science. A key aspect is to teach students scientific terminology and about the value of metadata, an inherent function in several of the technologies and in the instructional approach we are utilizing.

This poster will report on a study examining the value of both folksonomies and taxonomies for post-secondary college students learning plant identification. Our data is drawn from a curriculum involving a virtual independent learning portion and a "BotCamp" weekend at UNC, where students work with digital plant specimens that they have captured. Results provide some

72 http://ils.unc.edu/mrc/bot-20/

insight into the importance of collaboration and shared vocabulary for gaining confidence and for student progression from novice to expert in botany.

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References

Greenberg, Jane, Brian Heidorn, Stephen Seiberling, and Alan S. Weakly. (2005). Growing vocabularies for plant identification and scientific learning. *International Conference on Dublin Core and Metadata Applications*, *Madrid, Spain, September 12-15, 2005.*